IN THE CLAIMS

1. (original) A vacuum pumping system comprising a pump having an inlet for receiving from a vacuum chamber at least a first gas to be pumped; means for supplying a second, purge gas to be pumped with the first gas; the pump having an outlet for exhausting a gas stream comprising the first gas and the purge gas; and gas separating means for receiving the gas stream and recovering the purge gas from the stream, the supply means being arranged to receive from the gas separating means the recovered purge gas.

2. (original) The system as claimed in claim 1, wherein the supply means is arranged to supply the purge gas directly to the pump.

3. (withdrawn) The system as claimed in claim 1, wherein the supply means is arranged to supply the purge gas to the vacuum chamber.

4. (original) The system as claimed in claim 1, comprising a second pump having an inlet for receiving the gas stream from the first-mentioned pump and an outlet for exhausting the gas stream to the gas separating means.

5. (withdrawn) The system as claimed in claim 1, comprising a second pump having an inlet for receiving the recovered purge gas and an outlet for exhausting the recovered purge gas to the conveying means.

6. (withdrawn) The system as claimed in claim 5, comprising means for purifying the gas exhaust from the second pump.

7. (original) The system as claimed in claim 1, comprising first gas recirculating means for recirculating first gas from the separating means to the vacuum chamber.

8. (original) The system as claimed in claim 7, wherein the recirculating means comprises means for purifying the received first gas.

9. (original) The system as claimed in claim 8, wherein the recirculating means comprises means for pressurising the received first gas.

10. (original) The system as claimed in claim 9, wherein the separating means comprises cryogenic separating means for separating cryogenically the first gas from the gas stream to recover both the first and second gases.

11. (original) The system as claimed in claim 10, wherein the cryogenic separating means is arranged to condense the first gas without condensing the second gas.

12. (original) The system as claimed in claim 1, wherein the first pump comprises a turbo-molecular pump.

13. (original) The system as claimed in claim 1, wherein the first gas comprises a low thermal conductivity gas.

14. (original) The system as claimed in claim 13 wherein said low thermal conductivity gas is selected from the group consisting of xenon and argon.

15. (original) The system as claimed in claim 1, wherein the purge gas is lighter than the first gas.

16. (original) The system as claimed in claim 15, wherein the purge gas comprises one of helium and nitrogen.

17. (original) A vacuum pumping system, comprising first gas supply means for supplying a first gas to a vacuum chamber; a pump arranged to receive at least the first gas from the chamber; second gas supply means for supplying a second gas for pumping with the first gas; and gas separating means for receiving a gas stream output from the pump, recovering the first and second gases from the gas stream, outputting the recovered first gas to the first gas supply

means for recirculation through at least the chamber and outputting the recovered second gas to the second gas supply means for recirculation through at least the pump.

18. (original) An extreme ultra violet lithography apparatus comprising a vacuum pumping system as claimed in claim 1.

19. (original) A method of vacuum pumping, comprising receiving at a pump at least a first gas from a vacuum chamber, and a second, purge gas for pumping with the first gas; exhausting from the pump a gas stream comprising the first and second gases; recovering the second gas from the stream and recirculating the second gas through at least the pump.

20. (original) The method as claimed in claim 19, wherein the second gas is recirculated through both the vacuum chamber and the pump.

21. (original) The method as claimed in claim 19, wherein the pressure of the gas stream exhausted from the pump is increased prior to the recovery of the second gas therefrom.

22. (original) The method as claimed in claim 19, wherein the pressurised gas stream is purified prior to the recovery of the second gas stream therefrom.

23. (withdrawn) The method as claimed in claim 19, wherein the pressure of the recovered second gas is increased prior to its recirculation.

24. (withdrawn) The method as claimed in claim 23, wherein the pressurised, recovered second gas is purified prior to its recirculation.

25. (original) The method as claimed in claim 19, wherein the first gas is recovered from gas stream and recirculated to the vacuum chamber.

26. (original) The method as claimed in claim 25, wherein the recovered first gas is purified prior to its return to the vacuum chamber.

27. (original) The method as claimed in claim 26, wherein the recovered first gas is pressurised prior to its return to the vacuum chamber.

28. (original) The method as claimed in claim 19, wherein the first gas is cryogenically separated from the gas stream to recover the first and second gases.

29. (original) The method as claimed in claim 28, wherein the first gas is condensed without condensing the second gas to separate the first and second gases.

30. (original) The method as claimed in claim 19, wherein the first gas comprises a low thermal conductivity gas.

31. (original) The method as claimed in claim 30 wherein said low thermal conductivity gas is selected from the group consisting of xenon and argon.

32. (original) The method as claimed in claim 19, wherein the second gas is lighter than the first gas.

33. (original) The method as claimed in claim 19, wherein the second gas comprises one of helium and nitrogen.